

REMARKS

Please reconsider the application in view of the above amendments and the following remarks.

Disposition of Claims

Prior to this amendment, the application included claims 1-3 and 5-26. Applicants have amended independent claim 1 to recite that the drop ejector further comprises "at least one radial channel" as was previously recited in amended claim 16 (now canceled). Applicants have also amended independent claim 12 to recite that the method of fluid ejection further includes "least one radial channel in the substrate," as was previously recited in amended claim 21 (now canceled). Because applicants have incorporated limitations from dependent claims 16 and 21 within independent claims 1 and 12, respectively, we submit that the amendments do not raise new issues for search and consideration.

Dependent claims 17, 18, 22, and 23 have been amended such that they depend from the correct claim. Accordingly, claims 1-3, 5-15, and 17-20, and 22-26 are presented for examination, with claims 1 and 12 being in independent form.

Rejections under 35 U.S.C. §§102, 103

The Office Action rejects claims 1-3, 5-7, 9, 10, 15, and 16 under 35 U.S.C. 102(b) as being anticipated by Louzil et al. (U.S. Patent No. 4,422,082).

Independent Claim 1

The Examiner rejected claim 1 as anticipated by Louzil. Applicants submit that Louzil does not describe a "drop ejection device comprising...a channel formed in the substrate proximate the nozzle opening for drawing fluid into the space defined by the channel, and at least one radial channel," as recited in amended independent claim 1. Although Louzil describes

a trough 9 around a nozzle, he does not describe a radial channel. (See Figs. 6 and 7, element 9; col. 5, lines 5-11).

In one exemplary embodiment as shown in Applicant's Fig. 2A, channels 44 are connected by radial channels 46 and 48 that emanate from channels 44, forming a network of connected channels that direct and hold stray fluid on the nozzle plate. (see Applicant's Detailed Description, paragraph 14 and 15).

Accordingly, applicants submit that claim 1 is not anticipated and respectfully request that the rejection under 35 U.S.C. 102(b) be withdrawn. Furthermore, because claims 2, 3, 5-7, 9, 10, 15 depend from claim 1, these dependent claims are not anticipated for at least the same reason that independent claim 1 is not anticipated.

Dependent Claims 8, 11, and 17-19

The Examiner rejected claims 8 and 11 under 35 U.S.C. 103 as unpatentable over Louzil in view of Hawkins et al. (US 6,258,286). The Examiner acknowledges that Louzil fails to disclose a substrate that is a silicon material and a piezoelectric actuator. Applicants submit however that Hawkins fails to disclose the feature found to be lacking in Louzil. In particular, Hawkins does not describe or suggest at least one radial channel.

Accordingly, applicants submit that claims 8 and 11 are patentable and respectfully request the rejection under 35 U.S.C. 103 be withdrawn.

The Examiner rejected claims 17 and 18 under 35 U.S.C. 103 as unpatentable over Louzil in view of Kobayashi et al. (US 5,898,444). The Examiner acknowledges that Louzil fails to disclose a vacuum source in communication with the radial channel and a wicking material in communication with the radial channel. Applicants submit however that Kobayashi fails to disclose the feature lacking found to be lacking in Louzil. In particular, Kobayashi does not describe or suggest at least one radial channel.

Accordingly, applicants submit that claims 17 and 18 are patentable and respectfully request the rejection under 35 U.S.C. 103 be withdrawn.

The Examiner rejected claim 19 under 35 U.S.C. 103 as unpatentable over Louzil in view of Bentin (US 4,413,268). The Examiner acknowledges that Louzil fails to disclose that fluid is drawn into the space defined by the channel during jetting. Applicants submit however that any proper combination of Louzil and Bentin fail to disclose a drop ejection device comprising...a channel formed in the substrate proximate the nozzle opening for drawing fluid into the space defined by the channel, and at least one radial channel.

Accordingly, applicants submit that claim 19 is patentable and respectfully request the rejection under 35 U.S.C. 103 be withdrawn.

Independent Claim 12

The Examiner rejected claim 12 as unpatentable under 35 U.S.C. 103 over Louzil in view of Bentin. The Examiner acknowledges that Louzil fails to disclose drawing fluid into the space defined by the channel. The Examiner cites Bentin as disclosing this feature. However, Applicants submit that neither Louzil nor Bentin, separately or in any proper combination recite a "method of fluid ejection, comprising...positioning a channel in the substrate...and at least one radial channel....," as recited in amended independent claim 12.

As was discussed above in conjunction with independent claim 1, Louzil does not disclose at least one radial channel. Bentin also does not describe or suggest at least one radial channel. Rather, Bentin describes a trough between the nozzles and a channel in the middle of the trough. Bentin describes flooding the ink nozzles to clean the nozzles. The excess ink goes into the trough and is discharged through the channels. Bentin does not describe the channel discharging ink during operation. (Col. 5, lines 1-21)

Accordingly, applicants submit that claim 12 is patentable and request that the rejection under 35 U.S.C. 103 be withdrawn.

Dependent Claims 13, 14, 20, and 22-26

The Examiner rejected claims 20 and 24-26 under 35 U.S.C. 103 as unpatentable over Louzil in view of Bentin (US 4,413,268). The Examiner acknowledges that Louzil fails to

disclose drawing fluid into the space defined by the channel; fluid is drawn into the channel by capillary forces; fluid is drawn into the channel by gravity; and the fluid is drawn into the space defined by the channel during jetting. The Examiner cites Bentin as disclosing these features. As stated above, applicants submit however that any proper combination of Louzil and Bentin fail to disclose a "method of fluid ejection comprising... at least one radial channel." Applicants provide an example of a radial channel 46 in Fig. 2A of their application.

Accordingly, applicants submit that claims 20, 21, and 24-26 are patentable and request that the rejection under 35 U.S.C. 103 be withdrawn.

The Examiner rejected claims 13 and 14 under 35 U.S.C. 103 as being unpatentable over Louzil in view of Bentin as applied to claim 12, and further in view of Held (US 5,853,861). The Examiner acknowledges that Louzil does not describe or suggest the fluid has a surface tension of about 20-50 dyes/cm, and the fluid has a viscosity of about 1 to 40 centipoise. Examiner cites Held as disclosing these features. As stated above, applicants submit however that any proper combination of Louzil, Bentin, and Held fail to disclose a "method of fluid ejection comprising... at least one radial channel."

Accordingly, applicants submit that claims 13 and 14 are patentable and request that the rejection under 35 U.S.C. 103 be withdrawn.

The Examiner rejected claims 22 and 23 under 35 U.S.C. 103 as being unpatentable over Louzil in view of Bentin as applied to claim 12, and further in view of Kobayashi. The Examiner acknowledges that Louzil does not describe or suggest a vacuum source in communication with the radial channel, and a wicking material in communication with the radial channel. The Examiner cites Kobayashi as disclosing these features. As stated above, applicants submit however that any proper combination of Louzil, Bentin, and Kobayashi fail to disclose a "method of fluid ejection comprising... at least one radial channel."

Accordingly, applicants submit that claims 22 and 23 are patentable and request that the rejection under 35 U.S.C. 103 be withdrawn.

Applicants : John C. Batterton et al.
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Conclusion

The applicants believe that the claims have been shown to be allowable over the prior art. Applicants believe that this reply is responsive to each ground of rejection cited by the examiner in the Action dated July 6, 2005, and respectfully requests favorable action in this application.

No fee is believed to be due. Please apply any other charges, not covered, or credits to deposit account 06-1050.

Respectfully submitted,

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